UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,625	08/01/2006	Christoph Charton	P30086	3976

7055 7590 02/25/2010

GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER	
MCDONALD, RODNEY GLENN	

ART UNIT	PAPER NUMBER
1795	

NOTIFICATION DATE	DELIVERY MODE
02/25/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

gbpatent@gbpatent.com
pto@gbpatent.com

Office Action Summary	Application No.	Applicant(s)	
	10/597,625	CHARTON ET AL.	
	Examiner	Art Unit	
	Rodney G. McDonald	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11-1-06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5-7, 9-14, 17, 19-21, and 23-26 are rejected under 35 U.S.C. 102(a) as being anticipated by Rauschnabel et al. (U.S. Pat. 6,613,393).

Regarding claim 1, Rauschnabel et al. teach a method for producing an ultrabarrier layer system (Fig. 2). Rauschnabel et al. teach vacuum coating on a substrate a layer stack comprising an alternating layer system of smoothing layers and transparent ceramic layers, and comprising at least one smoothing layer between two transparent ceramic layers, which transparent layers are applied by sputtering and a monomer is admitted into an evacuated coating chamber in which a magnetron plasma is operated during deposition of the least one smoothing layer. (Column1 lines 57-67; Column 2 lines 1-62; Column 3 lines 60-67; Column 4 lines 1-15; Column 6 lines 35-67; Column 7 lines 1-23; Fig. 2) The examiner understands the smoothing layer to be a monomer created layer.

Regarding claim 2, Rauschnabel et al. teach that during deposition of the at least one smoothing layer the magnetron plasma operated in a pulsed manner with a pulse frequency of a few Hz and 10 kHz. (Column 2 lines 21-42)

Regarding claim 5, Rauschnabel et al. teach utilizing a noble gas as a working gas. (Column 2 lines 49-55)

Regarding claim 6, Rauschnabel et al. teach utilizing Si-organics. (Column 2 lines 1-20)

Regarding claim 7, Rauschnabel et al. teach utilizing at least one of oxygen, nitrogen and hydrogen. (Column 2 lines 49-55)

Regarding claim 9, Rauschnabel et al. teach the transparent ceramic layer can be deposited by magnetron sputtering. (Column 3 lines 60-67; Column 4 lines 1-15)

Regarding claim 10, Rauschnabel et al. teach the transparent ceramic layer to deposited by reactive magnetron sputtering and at least one of nitrogen, oxygen, and hydrogen as a reactive gas. (Column 3 lines 60-67; Column 4 lines 1-15)

Regarding claim 11, Rauschnabel et al. teach depositing Al2O3 as the transparent ceramic layer. (Column 3 lines 60-67)

Regarding claim 12, Rauschnabel et al. teach depositing SiO2 as the transparent ceramic layer. (Column 3 lines 60-67)

Regarding claim 13, Rauschnabel et al. teach depositing SiN as the transparent ceramic layer. (Column 3 lines 60-67)

Regarding claim 14, Rauschnabel et al. teach the coating to take place on a stationary substrate. (See Fig. 3)

Regarding claim 17, Rauschnabel et al. teach depositing on plastic substrate. (Column 6 lines20-37)

Regarding claim 19, Rauschnabel et al. teach depositing alternating layers and performing alternate monomer and reactive gas deposition in a single chamber. (Column 6 lines 34-64)

Regarding claim 20, Rauschnabel et al. teach alternating HDMSO and oxygen for sputtering. (Column 2 lines 14-15; Column 4 lines 21)

Regarding claim 21, Rauschnabel et al. teach depositing an alternating layer system where flows of the gas are controlled to form intermediate layers which correspond to the gradual change between layers. (Column 3 lines 31-33; Column 5 lines 66-67; Column 6 lines 1-2)

Regarding claim 23, Rauschnabel et al. teach the alternating layer system is deposited by at least one magnetron arrangement and admission of monomer and reactive gas or working gas takes place at different sites so that the layers of the alternating layer system are deposited successively when passing through a coating region on a moving substrate. (Column 6 lines 1-2; Column 6 lines 65-67; Column 7 lines 1-23)

Regarding claim 24, Rauschnabel et al. teach the alternating layer system is deposited by at least one magnetron arrangement and admission of monomer and reactive gas or working gas taking place at different sites so that a clear partial pressure gradient between the admitted gases develop in the region of the magnetron plasma such that when passing through the coating region on a moving substrate layers are successively deposited which merge into one another in a gradient form. (Column 6 lines 1-2; Column 6 lines 65-67; Column 7 lines 1-23)

Regarding claim 25, Rauschnabel et al. teach the substrate comprises moving a substrate through the coating region several times. (Fig. 2; Column 6 lines 65-67; Column 7 lines 1-23)

Regarding claim 26, Rauschnabel et al. teach deposition of the alternating system through simultaneous admission of HMDSO and oxygen. (Column 2 lines 1-20; Column 2 lines 49-62)

Claims 1, 2, 5-7, 9-14, 17, 19-21, and 23-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Rauschnabel et al. (WO 99/63129) (Rauschnabel et al. (U.S. Pat. 6,613,393) used for translational purposes).

Regarding claim 1, Rauschnabel et al. teach a method for producing an ultrabarrier layer system (Fig. 2). Rauschnabel et al. teach vacuum coating on a substrate a layer stack comprising an alternating layer system of smoothing layers and transparent ceramic layers, and comprising at least one smoothing layer between two transparent ceramic layers, which transparent layers are applied by sputtering and a monomer is admitted into an evacuated coating chamber in which a magnetron plasma is operated during deposition of the least one smoothing layer. (Column1 lines 57-67; Column 2 lines 1-62; Column 3 lines 60-67; Column 4 lines 1-15; Column 6 lines 35-67; Column 7 lines 1-23; Fig. 2) The examiner understands the smoothing layer to be a monomer created layer.

Regarding claim 2, Rauschnabel et al. teach that during deposition of the at least one smoothing layer the magnetron plasma operated in a pulsed manner with a pulse frequency of a few Hz and 10 kHz. (Column 2 lines 21-42)

Regarding claim 5, Rauschnabel et al. teach utilizing a noble gas as a working gas. (Column 2 lines 49-55)

Regarding claim 6, Rauschnabel et al. teach utilizing Si-organics. (Column 2 lines 1-20)

Regarding claim 7, Rauschnabel et al. teach utilizing at least one of oxygen, nitrogen and hydrogen. (Column 2 lines 49-55)

Regarding claim 9, Rauschnabel et al. teach the transparent ceramic layer can be deposited by magnetron sputtering. (Column 3 lines 60-67; Column 4 lines 1-15)

Regarding claim 10, Rauschnabel et al. teach the transparent ceramic layer to deposited by reactive magnetron sputtering and at least one of nitrogen, oxygen, and hydrogen as a reactive gas. (Column 3 lines 60-67; Column 4 lines 1-15)

Regarding claim 11, Rauschnabel et al. teach depositing Al2O3 as the transparent ceramic layer. (Column 3 lines 60-67)

Regarding claim 12, Rauschnabel et al. teach depositing SiO2 as the transparent ceramic layer. (Column 3 lines 60-67)

Regarding claim 13, Rauschnabel et al. teach depositing SiN as the transparent ceramic layer. (Column 3 lines 60-67)

Regarding claim 14, Rauschnabel et al. teach the coating to take place on a stationary substrate. (See Fig. 3)

Regarding claim 17, Rauschnabel et al. teach depositing on plastic substrate. (Column 6 lines20-37)

Regarding claim 19, Rauschnabel et al. teach depositing alternating layers and performing alternate monomer and reactive gas deposition in a single chamber. (Column 6 lines 34-64)

Regarding claim 20, Rauschnabel et al. teach alternating HDMSO and oxygen for sputtering. (Column 2 lines 14-15; Column 4 lines 21)

Regarding claim 21, Rauschnabel et al. teach depositing an alternating layer system where flows of the gas are controlled to form intermediate layers which correspond to the gradual change between layers. (Column 3 lines 31-33; Column 5 lines 66-67; Column 6 lines 1-2)

Regarding claim 23, Rauschnabel et al. teach the alternating layer system is deposited by at least one magnetron arrangement and admission of monomer and reactive gas or working gas takes place at different sites so that the layers of the alternating layer system are deposited successively when passing through a coating region on a moving substrate. (Column 6 lines 1-2; Column 6 lines 65-67; Column 7 lines 1-23)

Regarding claim 24, Rauschnabel et al. teach the alternating layer system is deposited by at least one magnetron arrangement and admission of monomer and reactive gas or working gas taking place at different sites so that a clear partial pressure gradient between the admitted gases develop in the region of the magnetron plasma such that when passing through the coating region on a moving substrate layers are successively deposited which merge into one another in a gradient form. (Column 6 lines 1-2; Column 6 lines 65-67; Column 7 lines 1-23)

Regarding claim 25, Rauschnabel et al. teach the substrate comprises moving a substrate through the coating region several times. (Fig. 2; Column 6 lines 65-67; Column 7 lines 1-23)

Regarding claim 26, Rauschnabel et al. teach deposition of the alternating system through simultaneous admission of HMDSO and oxygen. (Column 2 lines 1-20; Column 2 lines 49-62)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 4, 8, 22 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rauschnabel et al. (U.S. Pat. 6,613,393) or Rauschnabel et al. (WO

99/63129) in view of Landgraf et al. (WO 03/048406 A2) (Landgraf et al. U.S. PGPUB. 2005/0040034 A1 used for translation).

Rauschnabel et al. '393 or '129 is discussed above and all is as applies above. (See Rauschnabel et al. '393 or '129)

The differences between Rauschnabel et al. '393 or '129 and the present claims is that to maintain the magnetron plasma during deposition of the at least one smoothing layer, a magnetron is used that is equipped with a target that is made of a material that can be reactively converted with nitrogen or oxygen is not discussed (Claim 3), a double magnetron being used to maintain the plasma during the deposition of the at least one smoothing layer is not discussed (Claim 4), the process pressure is not discussed (Claim 8) and the reactive gas and the monomer gas being introduced via a common gas intake is not discussed (Claims 22, 27).

Regarding claim 3, Landgraf et al. teach maintaining the magnetron plasma during deposition of the at least one smoothing layer, a magnetron is used that is equipped with a target that is made of a material that can be reactively converted. (See Abstract; Paragraph 0011, 0017-0021) Rauschnabel et al. '393 or '129 teach utilizing oxygen or nitrogen for sputtering. (See Rauschnabel et al. '393 or '129 discussed above)

Regarding claim 4, Landgraf et al. teach magnetron sputtering and utilizing a second magnetron 13. (Paragraph 0011; 0021)

Regarding claim 8, Landgraf et al. teach the pressure can be 1 to 5 Pa. (Paragraph 0031)

Regarding claims 22, 27, Landgraf et al. teach the reactive gas and the monomer gas being introduced via a common gas intake. (Paragraph 0020)

The motivation for utilizing the features of Landgraf et al. is that it allows for coating efficiently and homogenously. (Paragraph 0008)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Rauschnabel et al. '393 or '129 by utilizing the features of Landgraf et al. because it allows for coating efficiently and homogenously.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rauschnabel et al. (U.S. Pat. 6,613,393) or Rauschnabel et al. (WO 99/63129) in view of Yang (U.S. Pat. 5,464,710).

Rauschnabel et al. '393 or '129 is discussed above and all is as applies above. (See Rauschnabel et al. '393 or '129)

The differences between Rauschnabel et al. '393 or '129 and the present claims is coating a web is not discussed. (Claim 15)

Regarding claim 15, Yang teaches coating a web with a monomer. (See Fig. 4; Column 8 lines 42-48)

The motivation for utilizing the features of Yang is that it allows for economical coating of substrates. (Column 3 lines 62-65)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Rauschnabel et al. '393 or '129 by utilizing the features of Yang because it allows for economical coating of substrates.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rauschnabel et al. (U.S. Pat. 6,613,393) or Rauschnabel et al. (WO 99/63129) in view of Bringmann et al. (U.S. Pat. 4,715,319).

Rauschnabel et al. '393 or '129 is discussed above and all is as applies above. (See Rauschnabel et al. '393 or '129)

The differences between Rauschnabel et al. '393 or '129 and the present claims is that keeping the substrate below 200 degrees C during the coating is not discussed. (Claim 16)

Regarding claim 16, Bringmann et al. teach keeping the substrate at 35 degrees C during the coating process. (See Bringmann et al. discussed above)

The motivation for utilizing the features of Bringmann et al. is that it allows for producing good uniformity. (Column 6 lines 42-48)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Rauschnabel et al. '393 or '129 by utilizing the features of Bringmann et al. because it allows for producing good coating uniformity.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rauschnabel et al. (U.S. Pat. 6,613,393) or Rauschnabel et al. (WO 99/63129) in view of Keem et al. (U.S. Pat. 4,619,865).

Rauschnabel et al. '393 or '129 is discussed above and all is as applies above. (See Rauschnabel et al. '393 or '129)

The differences between Rauschnabel et al. '393 or '129 and the present claims is that the thickness of the layers is not discussed (Claim 18).

Regarding claim 18, Keem et al. teach that layers should range from 50 Angstroms to 5,000 Angstroms. (Column 1 lines 64-68; Column 2 lines 1-25)

The motivation for utilizing the features of Keem et al. is that it allows for providing protection of the substrates. (Column 1 line 17)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Rauschnabel et al. '393 or '129 by utilizing the features of Keem et al. because it allows for providing protection of the substrates.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney G. McDonald whose telephone number is 571-272-1340. The examiner can normally be reached on M-Th with every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rodney G. McDonald/
Primary Examiner, Art Unit 1795

Rodney G. McDonald
Primary Examiner
Art Unit 1795

RM
February 22, 2010